

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of inserting a plurality of entries into an existing index keyed by multidimensional data, comprising:

selecting ~~subsets~~ nodes of the index each having entries and that overlap if the plurality of entries are inserted into a first one of the ~~subsets~~ nodes of the index, wherein the selected nodes ~~subsets~~ of the index are sibling nodes ~~of one another and not leaf nodes~~;

inserting the entries within the first one of the nodes of the index ~~subsets of the index~~;

partitioning the entries of the first one of the node into groups to reduce overlap, wherein

each group of entries corresponds to a partitioned node of the index; and

reorganizing the ~~subsets~~ a second one of the nodes of the index and the partitioned nodes ~~with the inserted entries~~, wherein said reorganizing includes reorganizing the entries in each of the second one of the nodes and the partitioned nodes such that an amount of overlap ~~of bounding boxes for objects in a strict subset of the index~~ is reduced.

2. (cancelled)

3. (currently amended) ~~A~~ The method according to claim 1, wherein:

the entries include spatial data; and

the index keyed by multidimensional data includes a spatial index.

4. (currently amended) A The method according to claim 1, wherein the sibling nodes are for an R-Tree index.

5. (cancelled)

6. (currently amended) A method of inserting a plurality of entries into a an existing spatial index, comprising:

selecting at least two and less than all children of a node in the spatial index, ~~wherein the~~
selected children ~~are not leaf nodes and include at least one entry objects distributed~~
within;

distributing the entries within a first one of the selected children;

partitioning the entries of the first one of the selected children into groups to reduce

overlap, wherein each group of entries corresponds to a partitioned child of the index;

and

reorganizing the partitioned children and a second one of the selected children, wherein the

reorganizing includes reorganizing the distribution of the entries in each of the second

one of the selected children and the partitioned children ~~objects distributed within the~~
~~selected children.~~

7. (currently amended) A The method according to claim 6, wherein said reorganizing includes reorganizing such that an amount of overlap of bounding boxes for objects in the spatial index is reduced.

8. (currently amended) A The method according to claim 7, wherein one of the bounding boxes includes a minimum bounding rectangle (MBR).

9. (currently amended) A The method according to claim 6, wherein at least two of the selected children have respective bounding boxes that overlap with one another.

10. (currently amended) A The method according to claim 6, wherein said selecting includes selecting exactly two of the children.

11. (currently amended) A The method according to claim 10, wherein the exactly two of the children have respective bounding boxes that overlap with one another.

12. (currently amended) A The A method according to claim 6, wherein the objects distributed among the selected children include the entries.

13. (cancelled)

14. (currently amended) A method of inserting a plurality of entries into an existing multidimensional-keyed index organized as an R-Tree, comprising:

associating a node in the R-tree with a buddy node that is a sibling of the node, ~~wherein the node and the buddy node are not leaf nodes;~~

clustering children of the node and the children of the buddy;

partitioning the clustered children and the entries into a plurality of groups, wherein at least one of the groups includes a child node of the cluster node, a buddy child node associated the child node, and one or more of the entries, said partition is performed so that overlap among bounding boxes associated with the groups is reduced; ~~and~~ inserting said one or more of the entries among the child node and the buddy child node associated the child node; and
reorganizing the child node and the buddy child node associated the child node, wherein the reorganizing includes reorganizing the distribution of the entries in each of the child node and the buddy child node associated the child node.

15. (currently amended) A The according to claim 14, wherein:

each node of the R-tree is associated with a respective bounding box; and
a first bounding box associated with the child node overlaps a second bounding box associated with the buddy child node.

16. (cancelled)

17. (cancelled)

18. (currently amended) A tangible computer-readable medium bearing instructions for inserting a plurality of entries into an existing index keyed by multidimensional data, said instructions arranged, upon execution by at least one processor, to perform the steps of:

selecting ~~subsets~~ nodes of the index each having entries and that overlap if the plurality of
entries are inserted into a first one of the subsets nodes of the index, wherein the
selected nodes ~~subsets~~ of the index are sibling nodes ~~of one another and not leaf nodes~~;
inserting the entries within the first one of the nodes of the index ~~subsets of the index~~;
partitioning the entries of the first one of the node into groups to reduce overlap, wherein
each group of entries corresponds to a partitioned node of the index; and
reorganizing the ~~subsets~~ a second one of the nodes of the index and the partitioned nodes
~~with the inserted entries~~, wherein said reorganizing includes reorganizing the entries in
each of the second one of the nodes and the partitioned nodes such that an amount of
overlap of bounding boxes for objects in a strict subset of the index is reduced.

19. (currently amended) A tangible computer-readable medium bearing instructions for
inserting a plurality of entries into an existing spatial index, said instructions arranged, upon
execution by at least one processor, to perform the steps of:

distributing the entries within a first one of the selected children;
partitioning the entries of the first one of the selected children into groups to reduce
overlap, wherein each group of entries corresponds to a partitioned child of the index;
and
reorganizing the partitioned children and a second one of the selected children, wherein the
reorganizing includes reorganizing the distribution of the entries in each of the second
one of the selected children and the partitioned children ~~objects distributed within the~~
~~selected children, wherein said reorganizing includes reorganizing~~ such that an amount
of overlap of bounding boxes for objects in a strict subset of the index is reduced.

20. (currently amended) A tangible computer-readable medium bearing instructions for inserting a plurality of entries into existing multidimensional-keyed index organized as an R-Tree, said instructions arranged, upon execution by at least one processor, to perform the steps of:

associating a node in the R-tree with a buddy node that is a sibling of the node, ~~wherein the node and the buddy node are not leaf nodes;~~

clustering children of the node and the children of the buddy;

partitioning the clustered children and the entries into a plurality of groups, wherein at least

one of the groups includes a child node of the cluster node, a buddy child node

associated the child node, and one or more of the entries, said partition is performed so

that overlap among bounding boxes associated with the groups is reduced; ~~and~~

inserting said one or more of the entries among the child node and the buddy child node

associated the child node; and

reorganizing the child node and the buddy child node associated the child node, wherein

the reorganizing includes reorganizing the distribution of the entries in each of the

child node and the buddy child node associated the child node.